



SEQUENCE LISTING

<110> Honeycutt, Rhonda
McClelland, Michael

<120> A METHOD OF IDENTIFYING TARGET ORGANISMS
BY DETERMINING THE CHARACTERISTICS OF THEIR
INTRONIC REGION NUCLEIC ACIDS

<130> 011399-0005-999

<140> US 10/607,559

<141> 2003-06-25

<150> US 09/645,055

<151> 2000-08-23

<150> US 60/150,977

<151> 1999-08-25

<160> 59

<170> FastSEQ for Windows Version 4.0

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<212> DNA

<213> Artificial Sequence

<220>

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<211> 22

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<213> Artificial Sequence

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<223> Intronic region-specific primer

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<220>
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 <223> Intronic region-specific primer

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 <220>
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<400> 24	
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<212> DNA
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<220>
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<400> 26
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<210> 27
<211> 21
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<220>
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<400> 27
acagaagacc attaactgat c 21

<210> 28
<211> 19
<212> DNA
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<220>
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<400> 28
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<210> 29
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<212> DNA
<213> Lycoperdon pyriforme

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<222> 362
<223> n = A,T,C or G

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tttgctttat ttcttgaagc ctttaacaaa agatcattgt ctttggctac tcaagcagta 480
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actaaactta ttggaggtgt tgttcgtaat cactctaaac tgggagtata cgaattaact 720
gtcaatggtg ctcgaaacgt ggaacgagta ttcaaatatt tcgatactca tccgttacaa 780
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gaacatctgt taccagagtc tcgagcagca ctgaaagtca aagcagctac tattaataac 900
atgaattagt gtacaacca acgggaataa aggaagtggg tcaatgtaat atctcttacc 960
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ggttggtgtaa tcttttagaga aaaacagctt agccttttgt gcagcagagc agctaataat 1140

atgcttaccc	cgacaggcgt	aaggatgaac	aattgttcat	tggcgataca	agtgaaaacg	1200
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cttgtgggtg	cctgaaaagg	tgcttaatgt	acagtcgatt	ccttatatta	cacaaggcta	1320
ttgtgctctt	tatgagatta	ggtttttagg	ttccaacagc	caaagccagc	agtagtttag	1380
gcactttcgc	gagcctaaat	ctacctggcc	tactgggcta	ttaagcatcc	agcctacaat	1440
agtacatggg	ccctagagag	agctaataaa	tctagggttt	taggggatgg	gttttttggg	1500
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<210> 30
 <211> 1459
 <212> DNA
 <213> Lycoperdon pyriforme

<220>
 <221> misc_feature
 <222> 332
 <223> n = A,T,C or G

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	ctagtcaatc	cttttttagat	tggttagtgg	gatttttcgga	aggagacggg	agctttataa	180
	tcaacagctg	tggaacagct	atttttcgtg	ttacacaaag	tacacttgat	ctacaagttc	240
	ttaagtatat	tcaacgaact	ctagggtttt	gtcgtgtaat	taaacaagga	caacgaacta	300
	gtcgttttgt	agttgaagac	aacgccagtg	tntgcactgc	tagttgctct	atttaattgga	360
	aatctaattt	tcacaactaa	acaatctagc	tttgctttat	ttcttgaagc	ctttaacaaa	420
	agatcattgt	ctttggctac	tcaagcagta	gaacttaaac	cgtcactgat	tactcctact	480
	agactaagca	tacacgattt	ttggtttagca	ggtttttacag	acgctgaagg	ttgcttcaat	540
	tgctcattat	taggttaactc	aaacgcgtat	agattccgat	ttcttctagc	acaaaaagga	600
	gaagttaatc	taactgtact	gacacagctt	actaaactta	ttggagggtg	tgttcgtaat	660
	cactctaaac	tgggagtata	cgaattaaact	gtcaatgggtg	ctcgaaacgt	ggaacgagta	720
	ttcaaataat	tcgatactca	tcggttacaa	acaaaaaaag	ctaattcgta	ccaaatatgg	780
	cgagaagtcc	atgcttctat	ccttaaagga	gaacatctgt	taccagagtc	tcgagcagca	840
	ctgaaagtca	aagcagctac	tattaataac	atgaattagt	gtacaaccca	acgggaataa	900
	aggaagtggg	tcaatgtaat	atctcttacc	taccaggcta	actagattag	agacaagttg	960
	tgaaactcta	ataggcaggt	gtctatttta	attctaaaga	cctgttagag	tgaataatat	1020
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	agcctttgtt	gcagcagagc	agctaataat	atgcttaccc	cgacaggcgt	aaggatgaac	1140
	aattgttcat	tggcgataca	agtgaaaacy	gtcaacgttt	gctcgaacca	agaccgtcgg	1200
	tagtttaaacy	tatcgctaca	gactgggtca	cttgtgggtg	cctgaaaagg	tgcttaatgt	1260
	acagtcgatt	ccttatatta	cacaaggcta	ttgtgctctt	tatgagatta	ggtttttagg	1320
	ttccaacagc	caaagccagc	agtagtttag	gcactttcgc	gagcctaaat	ctacctggcc	1380
	tactgggcta	ttaagcatcc	agcctacaat	agtacatggg	ccctagagag	agctaataaa	1440
	tctagggttt	taggggatg					1459

<210> 31
 <211> 30
 <212> DNA
 <213> Lycoperdon pyriforme

<400> 31	gagatcctat	tttatatcaa	cacttattct	30
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<210> 32
 <211> 57
 <212> DNA
 <213> Lycoperdon pyriforme

<400> 32	gttttttggg	catccagaag	tttatatttt	aattatacca	ggatttgga	tagtatg	57
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<210> 33
 <211> 1523
 <212> DNA
 <213> *Tilletia indica*

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 attttaccca acaattttca tcattttatc cttctaaaca aatacctact ttttctttcc 180
 tagaatggct tgtaggattt actgaaggag atggctgttt tggtatgagc actcgtggta 240
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 ataaactagg atttggtcgt gttattaaac aaggacattc tacatctcgt tttattgttc 360
 aggataataa gaatctttat ctacttctac atctgtttta tggtaattct gtacttccta 420
 ctaaaataga aagtttttaa aagtttatgg agatatttat caaaaattca tctaattatt 480
 cgattactcc aattagtgtt tgacgaacaa cacctagtgt taatgacgct tgaattagcg 540
 gatttacaga tgctgaagga tgttttactt gttctctact tggtaattct acagcatatc 600
 gatttcgttt catgcttagt caaaaaaatg agaaaaataa gtgtgtacta gatcatattg 660
 cttttctact aaatggaaaa gtacgacctc actctattca aggagtgtat gaactaactg 720
 taaacggaat ttgtaataat aaaggagtag tacaatactt tgataaatat aaactttaca 780
 ctaaaaaagc aagttcatat ctactatgga aagaagtatc agaggatctt aaagatggaa 840
 aacatctttc tgaaagtact cgtctaatta tgaaagaaaa ggtaataaaa atcaatagtt 900
 agaaatagta tataatctat cccacgggaa taaagggtgt gtttctacat aatttttata 960
 gttaatttaa aatttttata ttccgacgcc ttcagagcga ttrgaataaa taaaactaaa 1020
 ttgcctctgg ggtcaacgtg taaaaacata ataactataa aaaaagagcg aaattttatt 1080
 aggcaggtgg tattttaata taatgtaaag acctaatatg ataaagagat attctctacc 1140
 actactctag tccatgtcgt ataaatctgt gtaaccttta gagggaaaaca ggttttaagt 1200
 atgtttatgc ccacaggcat aaagtgattc taaaaaatca tcggcaatac aagtgaatac 1260
 ggtcaacgta tattcgtatg aagaccgtcg gcagtctaaa ctgtcgctac agactgggtc 1320
 acttgcgggt acctgaaatg gtgcttaatg tacaagtcggc tttctctaata ggtaaaactca 1380
 ttacacaagg ttattctctc tataagaggt cagaatagta cagggatttc taagagaact 1440
 gataaattag aaatttgga aagtgggttc ttcgggtcatc ctgaagttaa tatcctgatt 1500
 ataccaggat ttgggtagt aag 1523

<210> 34
 <211> 1435
 <212> DNA
 <213> *Tilletia indica*

<400> 34
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 agccaaccac aaatactttt tcctttcata attttaccca acaattttca tcattttatc 120
 cttctaaaca aatacctact ttttctttcc tagaatggct tgtaggattt actgaaggag 180
 atggctgttt tggtatgagc actcgtggta actgtatgtt tggtattaca caatctacta 240
 aggatattca agttcttcat tttattcaag ataaactagg atttggtcgt gttattaaac 300
 aaggacattc tacatctcgt tttattgttc aggataataa gaatctttat ctacttctac 360
 atctgtttta tggtaattct gtacttccta ctaaaataga aagtttttaa aagtttatgg 420
 agatatttat caaaaattca tctaattatt cgattactcc aattagtgtt tgacgaacaa 480
 cacctagtgt taatgacgct tgaattagcg gatttacaga tgctgaagga tgttttactt 540
 gttctctact tggtaattct acagcatatc gatttcgttt catgcttagt caaaaaaatg 600
 agaaaaataa gtgtgtacta gatcatattg cttttctact aaatggaaaa gtacgacctc 660
 actctattca aggagtgtat gaactaactg taaacggaat ttgtaataat aaaggagtag 720
 tacaatactt tgataaatat aaactttaca ctaaaaaagc aagttcatat ctactatgga 780
 aagaagtatc agaggatctt aaagatggaa aacatctttc tgaaagtact cgtctaatta 840
 tgaaagaaaa ggtaataaaa atcaatagtt agaaatagta tataatctat cccacgggaa 900
 taaagggtgt gtttctacat aatttttata gttaatttaa aatttttata ttccgacgcc 960
 ttcagagcga ttrgaataaa taaaactaaa ttgcctctgg ggtcaacgtg taaaaacata 1020
 ataactataa aaaaagagcg aaattttatt aggcaggtgg tattttaata taatgtaaag 1080
 acctaatatg ataaagagat attctctacc actactctag tccatgtcgt ataaatctgt 1140
 gtaaccttta gagggaaaaca ggttttaagt atgtttatgc ccacaggcat aaagtgattc 1200
 taaaaaatca tcggcaatac aagtgaatac ggtcaacgta tattcgtatg aagaccgtcg 1260
 gcagtctaaa ctgtcgctac agactgggtc acttgtgggt acctgaaatg gtgcttaatg 1320

tacagtcggc tttctctaataa ggtaaaatca ttacacaagg ttattctctc tataagaggt 1380
cagaatagta cagggatctc taagagaact gataaattag aaatttgga aagtg 1435

<210> 35
<211> 30
<212> DNA
<213> *Tilletia indica*

<400> 35
gagatcctat tttatatcaa cacctattct 30

<210> 36
<211> 58
<212> DNA
<213> *Tilletia indica*

<400> 36
ggttcttcgg tcactctgaa gtttatatcc tgattatacc aggatttggg atagtaag 58

<210> 37
<211> 1060
<212> DNA
<213> *Tilletia horrida*

<400> 37
gagatcctat tttatatcaa catctttttt ggttcttttg tcgaatatgg cccgatatac 60
ctatattcag aagggtatat atgaattaca ctgtatgctg gaaatatctg tttaatgtta 120
tttctactat catcataaga ggtattatta cgagcatatc ccgatatagt aaaaatgaaa 180
taacgaagat acaatcagca ggtaaccaac gacgctctat aagcagtcta gtaggaacca 240
cagagactat acgtgtaaca actttttcaa ccacttttgg acaatggcta gctggcgcta 300
ttgatggcga tggaagtcta caactgagta aacaaggcta tacaagtctt gaaatcacta 360
tgggacttga agatcttcct ctacttcggt atattcaaga taaacttgga ggatctatta 420
aaatgcgaac ggaagccaaa gcttatcgat atcgtctaca taataaaaaga ggtatgatta 480
ctatgatcaa ctacataaac ggaaatatcc gacattcatc acgacttaca caacttcacc 540
gagtatgtta acaacttcat atacctatca tggaaccgat tccactaacg aatgataatt 600
actggtttgc aggatttttt gatgcagaag gtactattac gtttagtttc aagaatgaat 660
atcctcaact aagcatatga gtatctaata aaaacatgga agacgttcag tggataaaaa 720
atatatttgg aggctatatc tattttgata gtagtcaata tggtcattat caatggtcag 780
tgcaaagacg taatgatgtt ataagaatga gaagatattt caagaataaa tgtaaaagtc 84
ataaatcaaa ccgatttttc cttatatcgg attattatca actttcagat ctaaaagcat 900
ataaaaaaga gagttaatat aataatctgt ggcactatct tgtccaaaag tgggacaaat 960
taagttgaag ataaagtcca ttttatttta ctgtgtaata tagtaaaaaa aagcatcccc 1020
aagtttatat tctaattata ccaggatttg ggatagtaag 1060

<210> 38
<211> 972
<212> DNA
<213> *Tilletia horrida*

<400> 38
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aaatatctgt ttaatgttat ttctactatc atcataagag gtattattac gagcatatcc 120
cgatatagta aaaatgaaat aacgaagata caatcagcag gtaaccaacg acgctctata 180
agcagtctag taggaaccac agagactata cgtgtaacaa ctttttcaac cacttttgga 240
caatggctag ctggcggtat tgatggcgat ggaagtctac aactgagtaa acaaggctat 300
acaagtcttg aaatcactat gggacttgaa gatcttcctc tacttcgcta tattcaagat 360
aaacttggag gatctattaa aatgcgaacg gaagccaaag cttatcgata tcgtctacat 420
aataaaaagag gtatgattac tatgatcaac tacataaacg gaaatattcg acattcatca 480
cgacttacac aacttcaccg agtatgttaa caacttcata tacctatcat ggaaccgatt 540
ccactaacga atgataatta ctgggtttgca ggattttttg atgcagaagg tactattacg 600
tttagtttca agaatgaata tctcactata agcatacag tatctaataa aaacatggaa 660
gacgttcagt ggtataaaaa tatatttgga ggctatatct attttgatag tagtcaatat 720

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gtgcattatc aatgggtcagt gcaaagacgt aatgatgtta taagaatgag aagatatttc 780
aagaataaat gtaaaagtca taaatcaaac cgattttttcc ttatatcgga ttattatcaa 840
ctttcagatc taaaagcata taaaaaagag agttaatata ataatctgtg gcactatttt 900
gtccaaaagt gggacaaatt aagttgaaga taaagtccat tttattttac tgtgtaatat 960
agtaaaaaaa ag 972

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<210> 39
<211> 41
<212> DNA
<213> Tilletia horrida

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<400> 39
gagatcctat tttatatcaa catctttttt ggttcttttg t 41

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<210> 40
<211> 47
<212> DNA
<213> Tilletia horrida

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<400> 40
catcccgaag tttatattct aattatacca ggatttgga tagtaag 47

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<210> 41
<211> 372
<212> DNA
<213> Tilletia tritici

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<220>
<221> misc_feature
<222> 323
<223> n = A,T,C or G

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attttactga acaattttaa accacatcat ttttcccttc taaacaagta cctacttctt 180
cttttctaga atggtttgta ggatttactg aaggagacgg cagttttggt gtaagcactc 240
gtggttaactg tatgtttggt attacacaat ctactaagga tattcaagtt cttcatttta 300
tctttgcttt acggctccgc ganttatata taataaaaaa gttcaagata aaccaggatt 360
tggtatagta ag 372

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<210> 42
<211> 291
<212> DNA
<213> Tilletia tritici

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<400> 42
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aacaaacat aaataccttt tcctttcata attttactga acaattttaa accacatcat 120
ttttcccttc taaacaagta cctacttctt cttttctaga atggtttgta ggatttactg 180
aaggagacgg cagttttggt gtaagcactc gtggttaactg tatgtttggt attacacaat 240
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<210> 43
<211> 30
<212> DNA
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<400> 43
gagatcctat tttatatcaa cacctgttct 30

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<211> 51
 <212> DNA
 <213> *Tilletia tritici*

<220>
 <221> misc_feature
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<210> 45
 <211> 1056
 <212> DNA
 <213> *Candida tropicalis*

<400> 45
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 cttacttaac tactctaggt atcagctctac tcctagcccc tagagtaaaa aggttaagag 180
 atagtagcaa tactagcagt gatgcagcag akaaccaacg gttcatattc caagctatta 240
 atgcctatga actcagtaga tatttcagag actacacgtg taactgtatc cccttctacg 300
 gacccattcc atcaatgatt agctgggtcta atcgatgcta atgggtgcctt taaaatcact 360
 cataaatcac aagtaaattg tgagataata gtgcctcaga acgaggaaag aatgttaaga 420
 gttattcaag acaagtatgg tggttctatc aggccttagat cagggtgatcg tacccttcgt 480
 tacagattac aagataaagc tagtgtaatc accttaatac aacatgttaa tggtaacctt 540
 catactcctt taagattaag ccaactacat cgggtatgtc ctctacttaa tatagaggct 600
 aacatgccta tacctttaac catattttaat ggttgattta tgggctatct tgatggtaaa 660
 ggtaacatca gatgtagagt acctaataatc tacttaagtg ctacaggtaa agctgcagta 720
 agtcttcaag gttttgttga tgtttttggt ggtgagatag tataccgtag agccagchat 780
 ggttcatata catggaaact atcccgctcg cctagtgtgc tgttatttat gaggtatcag 840
 amatgacata tatcacagtc aacammgcag cggagattgg gcttaatgag aaagtctatc 900
 acttaattta catggagaaa agtggggatt taaaargatt ttctctgtta aagacatgag 960
 twttattcca taataaatga aaataaatgc agaagatata gtccatacgc atcctgaggk 1020
 ttatatcctg attataccag gatttgggat agtwag 1056

<210> 46
 <211> 968
 <212> DNA
 <213> *Candida tropicalis*

<400> 46
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 ctatgtacat cgtacatagc ttacttaact actctaggta tcagtctact cctagcccct 120
 agagtaaaaa ggtaagaga tagtagcaat actagcagtg atgcagcaga kaaccaacgg 180
 ttcatattcc aagctattaa tgccatgaat ctcagtagat atttcagaga ctacacgtgt 240
 aactgtatcc ccttctacgg acccattcca tcaatgatta gctgggtctaa tcgatgctaa 300
 tgggtgccttt aaaatcactc ataaatcaca agtaaattgt gagataatag tgcctcagaa 360
 cgaggaaaga atgttaagag ttattcaaga caagtatggt ggttctatca ggcttagatc 420
 aggtgatcgt acccttcggt acagattaca agataaagct agtgtaatca ccttaataca 480
 acatgttaat ggtaaccttc atactccttt aagattaagc caactacatc gggatgtgcc 540
 tctacttaat atagaggcta acatgcctat acctttaacc atatttaatg gttgatttat 600
 gggctatctt gatggtaaag gtaacatcag atgtagagta cctaataatc acttaagtgc 660
 tacaggtaaa gctgcagtaa gtcttcaagg ttttgttgat gtttttgggt gtgagatagt 720
 ataccgtaga gccagchatg gttcatatac atggaaacta tcccgtcgac ctagtgtgct 780
 gttatttatg aggtatcaga matgacatat atcacagtca acammgcagc ggagattggg 840
 cttaatgaga aagtctatca cttaatttac atggagaaaa gtggggattt aaaargattt 900
 tctctgttaa agacatgagt wttattccat aataaatgaa aataaatgca gaagatatag 960
 tccatacg 968

<210> 47
 <211> 41
 <212> DNA
 <213> Candida tropicalis

<400> 47
 gagatcctat tttatatcaa cacctcttct gattcttcgg t 41

<210> 48
 <211> 47
 <212> DNA
 <213> Candida tropicalis

<400> 48
 catcctgagg kttatatacct gattatacca ggatttgagg tagtwag 47

<210> 49
 <211> 234
 <212> PRT
 <213> Candida tropicalis

<220>
 <221> VARIANT
 <222> 4, 193, 214, 222
 <223> Xaa = Any Amino Acid

<400> 49
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 1 5 10 15
 Asn Ser Val Asp Ile Ser Glu Thr Thr Arg Val Thr Val Ser Pro Ser
 20 25 30
 Thr Asp Pro Phe His Gln Trp Leu Ala Gly Thr Ile Asp Ala Asn Gly
 35 40 45
 Ala Phe Lys Ile Thr His Lys Ser Gln Val Asn Cys Glu Met Met Val
 50 55 60
 Pro Gln Asn Glu Glu Arg Met Leu Arg Val Ile Gln Asp Lys Tyr Gly
 65 70 75 80
 Gly Ser Ile Arg Thr Arg Ser Gly Asp Arg Thr Thr Arg Tyr Arg Leu
 85 90 95
 Gln Asp Lys Ala Ser Val Ile Thr Leu Met Gln His Val Asn Gly Asn
 100 105 110
 Thr His Thr Pro Leu Arg Leu Ser Gln Thr His Arg Val Cys Pro Thr
 115 120 125
 Thr Asn Met Glu Ala Asn Met Pro Met Pro Leu Thr Met Phe Asn Gly
 130 135 140
 Trp Phe Met Gly Tyr Phe Asp Gly Lys Gly Asn Ile Arg Cys Arg Val
 145 150 155 160
 Pro Asn Ile Tyr Leu Ser Ala Thr Gly Lys Ala Ala Val Ser Thr Gln
 165 170 175
 Gly Phe Val Asp Val Phe Gly Gly Glu Met Val Tyr Arg Arg Ala Ser
 180 185 190
 Xaa Gly Ser Tyr Thr Trp Lys Thr Ser Arg Arg Pro Ser Val Thr Leu
 195 200 205
 Phe Met Arg Tyr Gln Xaa Trp His Met Ser Gln Ser Thr Xaa Gln Arg
 210 215 220
 Arg Leu Gly Leu Met Arg Lys Ser Ile Thr
 225 230

<210> 50
 <211> 156

<212> PRT
 <213> Tilletia horrida

<400> 50
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 Ile Ile Met Arg Gly Ile Ile Thr Ser Met Ser Arg Tyr Ser Lys Asn
 20 25 30
 Glu Met Thr Lys Met Gln Ser Ala Gly Asn Gln Arg Arg Ser Met Ser
 35 40 45
 Ser Thr Val Gly Thr Thr Glu Thr Met Arg Val Thr Thr Phe Ser Thr
 50 55 60
 Thr Phe Gly Gln Trp Thr Ala Gly Val Ile Asp Gly Asp Gly Ser Thr
 65 70 75 80
 Gln Thr Ser Lys Gln Gly Tyr Thr Ser Thr Glu Ile Thr Met Gly Thr
 85 90 95
 Glu Asp Thr Pro Thr Thr Arg Tyr Ile Gln Asp Lys Thr Gly Gly Ser
 100 105 110
 Ile Lys Met Arg Thr Glu Ala Lys Ala Tyr Arg Tyr Arg Thr His Asn
 115 120 125
 Lys Arg Gly Met Ile Thr Met Ile Asn Tyr Met Asn Gly Asn Ile Arg
 130 135 140
 His Ser Ser Arg Thr Thr Gln Thr His Arg Val Cys
 145 150 155

<210> 51
 <211> 115
 <212> PRT
 <213> Tilletia horrida

<400> 51
 Met Glu Pro Ile Pro Thr Thr Asn Asp Asn Tyr Trp Phe Ala Gly Phe
 1 5 10 15
 Phe Asp Ala Glu Gly Thr Ile Thr Phe Ser Phe Lys Asn Glu Tyr Pro
 20 25 30
 Gln Thr Ser Met Arg Val Ser Asn Lys Asn Met Glu Asp Val Gln Trp
 35 40 45
 Tyr Lys Asn Met Phe Gly Gly Tyr Ile Tyr Phe Asp Ser Ser Gln Tyr
 50 55 60
 Gly His Tyr Gln Trp Ser Val Gln Arg Arg Asn Asp Val Met Arg Met
 65 70 75 80
 Arg Arg Tyr Phe Lys Asn Lys Cys Lys Ser His Lys Ser Asn Arg Phe
 85 90 95
 Phe Thr Met Ser Asp Tyr Tyr Gln Thr Ser Asp Thr Lys Ala Tyr Lys
 100 105 110
 Lys Glu Ser
 115

<210> 52
 <211> 1547
 <212> DNA
 <213> Lycoperdon pyriforme

<220>
 <221> misc_feature
 <222> 362
 <223> n = A,T,C or G

<400> 52
 ctctaggata aaatatagtt gtgaataaga attgtttttg taacatgtga taaggagatc 60
 atcgattcctt aagctgttcg agggcgctcg gaaagggttaa accgtgtaaa aactgtgaaa 120

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tgtcatttgc aaaaggattg cgattccgag gatcagttag gaaaaatcta accgatcacc 180
ctaaaagcct tcctctgccca tcgaaatatt agttgtcagc accttgtcga taaaagcact 240
aatgtgtttc atgtgaacta gatgttcaag aattcatata agttgcttga gatccaaaac 300
cagcacatta atttgttcct gttgcttgat cagcaaaaaca tcaacttctg ttgcggtcac 360
anacgtgacg atcaacgaga taaattacct ttagattaaa agtgttgatt tgtagatcg 420
aaacgaaata aagaacttcg gaaattgttt tctagtaaca gaaaccgatg agttcgtcat 480
cttgaatttg gcagtgacta atgaggatga tctgattcgt atgtgctaaa aaccaatcgt 540
ccaaaatgtc tgcgacttcc aacgaagtta acgagtaata atccattgag tttgcgcata 600
tctaaggcta aagaagatcg tgtttttcct cttcaattag attgacatga ctgtgtcgaa 660
tgatttgaat aacctccaca acaagcatta gtgagatttg accctcatat gcttaattga 720
cagttaccac gagctttgca ccttgctcat aagtttataa agctatgagt aggcaatggt 780
tggttttttc gattaagcat ggtttatacc gctcttcaag tacgaagata ggaatttcct 840
cttgtagaca atggtctcag agctcgtcgt gactttcagt ttcgtcgtg ataattattg 900
tacttaatca catgttgggt tgcccttatt tccttcacca agttacatta tagagaatgg 960
atggtccgat tgatctaate tctgttcaac actttgagat tatccgtcca cagataaaat 1020
taagatttct ggacaatctc acttattata aatatgggtga taagatcagg tataatatgt 1080
ccaacacatt agaaatctct ttttgtcgaa tcggaaacaa cgtcgtctcg tcgattatta 1140
tacgaatggg gctgtccgca ttctacttg ttaacaagta accgctatgt tcacttttgc 1200
cagttgcaaa cgagcttggt tctggcagcc atcaaatttg atagcgatgt ctgaccaggt 1260
gaacacccac ggacttttcc acgaattaca tgcagctaa ggaatataat gtgttccgat 1320
aacacgagaa atactctaata ccaaaaatcc aaggttgctg gtttcggtcg tcatcaaatc 1380
cgtgaaagcg ctcggattta gatggaccgg atgacccgat aattcgtagg tcggatgtta 1440
tcatgtaccc gggatctctc tcgattattt agatcccaaa atcccctacc caaaaaacca 1500
gtaggtcttc aaatataaaa ttaatatggt cctaaaccct atcatac 1547

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<210> 53
 <211> 203
 <212> PRT
 <213> Lycoperdon pyriforme

<220>
 <221> VARIANT
 <222> 181
 <223> Xaa = Any Amino Acid

<400> 53

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Gly	Asn	Arg	Cys	Ser	Pro	Leu	Arg	Met	Glu	Ala	Trp	Thr	Ser	Arg	His
			20					25					30		
Ile	Trp	Tyr	Glu	Leu	Ala	Phe	Leu	Val	Cys	Asn	Gly	Trp	Val	Ser	Lys
		35					40					45			
Tyr	Leu	Asn	Thr	Arg	Ser	Thr	Phe	Arg	Ala	Pro	Leu	Thr	Val	Asn	Ser
	50					55					60				
Tyr	Thr	Pro	Ser	Leu	Glu	Trp	Leu	Arg	Thr	Thr	Pro	Pro	Met	Ser	Leu
65					70					75				80	
Val	Ser	Cys	Val	Ser	Thr	Val	Arg	Leu	Thr	Ser	Pro	Phe	Cys	Ala	Arg
				85					90					95	
Arg	Asn	Arg	Asn	Thr	Tyr	Ala	Phe	Glu	Leu	Pro	Asn	Asn	Glu	Gln	Leu
			100					105					110		
Lys	Gln	Pro	Ser	Ala	Ser	Val	Lys	Pro	Ala	Asn	Gln	Lys	Ser	Cys	Met
		115					120					125			
Thr	Ser	Thr	Val	Gly	Val	Ile	Ser	Asp	Gly	Leu	Ser	Ser	Thr	Ala	Trp
	130					135					140				
Val	Ala	Lys	Asp	Asn	Asp	Thr	Leu	Leu	Lys	Ala	Ser	Arg	Asn	Lys	Ala
145					150					155					160
Lys	Thr	Asp	Cys	Leu	Val	Val	Lys	Ile	Arg	Phe	Pro	Leu	Asn	Arg	Ala
				165					170					175	
Thr	Ser	Ser	Ala	Xaa	Thr	Gly	Val	Val	Phe	Asn	Tyr	Lys	Thr	Thr	Ser
			180					185					190		
Ser	Leu	Ser	Leu	Phe	Asn	Tyr	Thr	Thr	Lys	Thr					
	195						200								

<210> 5
 <211> 225
 <212> PRT
 <213> Tilletia indica

<400> 54
 Met Ser Thr Arg Gly Asn Cys Met Phe Val Ile Thr Gln Ser Thr Lys
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 20 25 30
 Val Ile Lys Gln Gly His Ser Thr Ser Arg Phe Ile Val Gln Asp Asn
 35 40 45
 Lys Asn Thr Tyr Thr Thr Thr His Thr Phe Asn Gly Asn Thr Val Thr
 50 55 60
 Pro Thr Lys Met Glu Ser Phe Lys Lys Phe Met Glu Met Phe Ile Lys
 65 70 75 80
 Asn Ser Ser Asn Tyr Ser Ile Thr Pro Ile Ser Val Trp Arg Thr Thr
 85 90 95
 Pro Ser Cys Asn Asp Ala Trp Ile Ser Gly Phe Thr Asp Ala Glu Gly
 100 105 110
 Cys Phe Thr Cys Ser Thr Thr Gly Asn Ser Thr Ala Tyr Arg Phe Arg
 115 120 125
 Phe Met Thr Ser Gln Lys Asn Glu Lys Asn Lys Cys Val Thr Asp His
 130 135 140
 Ile Ala Phe Thr Thr Asn Gly Lys Val Arg Pro His Ser Ile Gln Gly
 145 150 155 160
 Val Tyr Glu Thr Thr Val Asn Gly Ile Cys Asn Asn Lys Gly Val Val
 165 170 175
 Gln Tyr Phe Asp Lys Tyr Lys Thr Tyr Thr Lys Lys Ala Ser Ser Tyr
 180 185 190
 Thr Thr Trp Lys Glu Val Ser Glu Asp Thr Lys Asp Gly Lys His Thr
 195 200 205
 Ser Glu Ser Thr Arg Thr Ile Met Lys Glu Lys Val Met Lys Ile Asn
 210 215 220
 Ser
 225

<210> 55
 <211> 1481
 <212> DNA
 <213> Aspergillus niger

<400> 55
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 atagtacttt cataaataaa tttrattttt caaattttta tataaaaattt tctaattatt 180
 tacctaataa tacttttacct tcagaaaaat tcttgacttg atttatagga ttcacagaag 240
 gtgaggggtc atttatagta aataatagag gtgatctttg ttttgttatt acacaaaaaa 300
 ctatagatat tgaaatatta gaatttataa aagaaacttt aggttttggg aaagtaattc 360
 aacaatctaa attaactagt agatatgtta cacaaaacaa aaaagaaata gaaatactta 420
 ttcatttggt taatggtaat cttatattac caagtagaaa gataaaaattt gaaaatttca 480
 ttaaaggatt taatatttga ataggtaaag gtagaataaaa attagatcct gttgaattaa 540
 aacataattt tattttacct agtttaaata atagttgatt ggcaggtttt actgatgggg 600
 aaggctgtyt tacttgttct ataggtaaag acaaaggatt tagttttaat tttaatattg 660
 ctcaaaaatg agaggaaaaat attgaagtat tacaacatct ttgtacttta tttaatggag 720
 gaatagtctc aaaacatagt gtggataatg taaatgaatt tagaatagga ggattaaaaa 780
 attgtaaaaa tatatttccc tattttgata cttatacatt attaactaaa aaatctacta 840
 gttatatatt atgaaaagaa atatatgaag atttggttaa aaaatatcat ttagacccaa 900
 ttaaaagggt agagatgatt gaaaaagcta gattgataaa taaaattaat taattaaaat 960
 attagggaag aaaagtaaaag gtttaacgtg caagttttga agctcttagg acagatgtaa 1020
 aaggatataa gatccaaaag agcaaatatt ctataatgaa tataccttat acttagttaa 1080
 tgtttagtta ttactacttg caactcttaa gtgtaacgta tatataattt ggtatatatt 1140

gttatactta	tcaattaata	tataattgat	aaaaggaaaa	gtagtataa	acattagcga	1200
tactagtgtt	aacgggtcaat	aaattttcat	gtttaaagac	cgtcggttat	ttaagtgacc	1260
gctacagact	ggttcactgg	taggtggctg	aaatgctgct	taatgtacag	tcggttcctt	1320
ccatatttta	tatatgcaca	agcccagaat	tatataatta	ctggtacctg	gatttaataa	1380
atgaacatca	atatattgat	gagaagttaa	atttgaagga	atggattctt	cggacatccg	1440
gaagtttaca	tcttaattat	accaggattt	gggatatgtaa	g		1481

<210> 56
 <211> 1393
 <212> DNA
 <213> *Aspergillus niger*

<400> 56						
caagagatat	tttaattaat	tgtttaatat	taacaattct	agcttcaata	gtaaagatta	60
ataaatcaaa	tttaagtttt	aaattttaatt	atagtacttt	cataaataaa	tttrattttt	120
caaattttta	tataaaattt	tctaattatt	tacctaatat	tactttacct	tcagaaaaat	180
tcttgacttg	atttatagga	ttcacagaag	gtgaggggtc	atttatagta	aataatagag	240
gtgatctttg	ttttgttatt	acacaaaaaa	ctatagatat	tgaaatatta	gaatttataa	300
aagaaaacttt	aggtttttgt	aaagtaattc	aacaatctaa	attaactagt	agatatgtta	360
cacaaaacaa	aaaagaaata	gaaatactta	ttcatttggt	taatggtaat	cttatattac	420
caagtagaaa	gataaaattt	gaaaatttca	ttaaaggatt	taatatttga	ataggtaaag	480
gtagaataaa	attagatcct	gttgaattaa	aacataattt	tattttacct	agtttaaata	540
atagttgatt	ggcagggttt	actgatgggg	aaggctgtyt	tacttgttct	ataggtaaag	600
acaaaggatt	tagttttaat	tttaatatgt	ctcaaaaatg	agaggaaaat	attgaagtat	660
tacaacatct	ttgtacttta	tttaatggag	gaatagtctc	aaaacatagt	gtggataatg	720
taaatgaatt	tagaatagga	ggattaaaaa	attgtaaaaa	tatattttcc	tattttgata	780
cttatacatt	attaactaaa	aaatctacta	gttatatatt	atgaaaagaa	atatatgaag	840
atttggttaa	aaaatatcat	ttagacccaa	ttaaaagggt	agagatgatt	gaaaaagcta	900
gattgataaa	taaaattaat	taattaaaaa	attagggaaa	aaaagtaaa	gtttaacgtg	960
caagttttga	agctcttagg	acagatgtaa	aaggatataa	gatccaaaag	agcaaataat	1020
ctataatgaa	tataacctat	acttagttaa	tgtttagtta	ttactacttg	caactcttaa	1080
gtgtaacgta	tatataattt	ggtatatatt	gttatactta	tcaattaata	tataattgat	1140
aaaaggaaaa	gtagtataa	acattagcga	tactagtgtt	aacgggtcaat	aaattttcat	1200
gtttaaagac	cgtcggttat	ttaagtgacc	gctacagact	ggttcactgg	taggtggctg	1260
aaatgctgct	taatgtacag	tcggttcctt	ccatatttta	tatatgcaca	agcccagaat	1320
tatataatta	ctggtacctg	gatttaataa	atgaacatca	atatattgat	gagaagttaa	1380
atttgaagga	atg					1393

<210> 57
 <211> 30
 <212> DNA
 <213> *Aspergillus niger*

<400> 57				
gagatcctat	tttatatcaa	catcttttct		30

<210> 58
 <211> 58
 <212> DNA
 <213> *Aspergillus niger*

<400> 58						
gattcttcgg	acatccggaa	gtttacatct	taattatacc	aggatttggg	atagtaag	58

<210> 59
 <211> 316
 <212> PRT
 <213> *Aspergillus flavus*

<220>
 <221> VARIANT

<222> 48, 203

<223> Xaa = Any Amino Acid

<400> 59

Asp	Pro	Ile	Leu	Tyr	Gln	His	Leu	Phe	Ser	Arg	Asp	Ile	Leu	Ile	Asn
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			20					25					30		
Asn	Leu	Ser	Phe	Lys	Phe	Asn	Tyr	Ser	Thr	Phe	Ile	Asn	Lys	Phe	Xaa
		35					40					45			
Phe	Ser	Asn	Phe	Tyr	Ile	Lys	Phe	Ser	Asn	Tyr	Leu	Pro	Asn	Asn	Thr
	50					55					60				
Leu	Pro	Ser	Glu	Lys	Phe	Leu	Thr	Trp	Phe	Ile	Gly	Phe	Thr	Glu	Gly
65					70					75					80
Glu	Gly	Ser	Phe	Ile	Val	Asn	Asn	Arg	Gly	Asp	Leu	Cys	Phe	Val	Ile
				85					90					95	
Thr	Gln	Lys	Thr	Ile	Asp	Ile	Glu	Ile	Leu	Glu	Phe	Ile	Lys	Glu	Thr
			100					105					110		
Leu	Gly	Phe	Gly	Lys	Val	Ile	Gln	Ser	Lys	Leu	Thr	Ser	Arg	Tyr	
		115					120					125			
Val	Thr	Gln	Asn	Lys	Lys	Glu	Ile	Glu	Ile	Leu	Ile	His	Leu	Phe	Asn
		130				135						140			
Gly	Asn	Leu	Ile	Leu	Pro	Ser	Arg	Lys	Ile	Lys	Phe	Glu	Asn	Phe	Ile
145					150					155					160
Lys	Gly	Phe	Asn	Ile	Trp	Ile	Gly	Lys	Gly	Arg	Ile	Lys	Leu	Asp	Pro
				165					170					175	
Val	Glu	Leu	Lys	His	Asn	Phe	Ile	Leu	Pro	Ser	Leu	Asn	Asn	Ser	Trp
			180					185					190		
Leu	Ala	Gly	Phe	Thr	Asp	Gly	Glu	Gly	Cys	Xaa	Thr	Cys	Ser	Ile	Gly
		195					200						205		
Lys	Asp	Lys	Gly	Phe	Ser	Phe	Asn	Phe	Asn	Ile	Ala	Gln	Lys	Trp	Glu
	210					215					220				
Glu	Asn	Ile	Glu	Val	Leu	Gln	His	Leu	Cys	Thr	Leu	Phe	Asn	Gly	Gly
225					230					235					240
Ile	Val	Ser	Lys	His	Ser	Val	Asp	Asn	Val	Asn	Glu	Phe	Arg	Ile	Gly
				245					250					255	
Gly	Leu	Lys	Asn	Cys	Lys	Asn	Ile	Phe	Pro	Tyr	Phe	Asp	Thr	Tyr	Thr
			260					265					270		
Leu	Leu	Thr	Lys	Lys	Ser	Thr	Ser	Tyr	Ile	Leu	Trp	Lys	Glu	Ile	Tyr
		275					280					285			
Glu	Asp	Leu	Leu	Lys	Lys	Tyr	His	Leu	Asp	Pro	Ile	Lys	Arg	Val	Glu
	290					295					300				
Met	Ile	Glu	Lys	Ala	Arg	Leu	Ile	Asn	Lys	Ile	Asn				
305					310						315				